不畏浮云遮望眼

Baidu Industry
Empowerment Collection
2023

飞桨

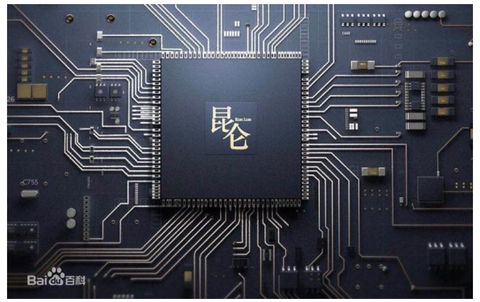
Autonomous and Controllable AI Industry enabling platform

China's The first fully open source, fully functional industrial level deep-learning platform

apollo

The world's leading self-driving solutions

Open, complete, and secure autonomous driving software and hardware integrated solutions, open platform, and ecosystem



Kun-Lun

China's first full-function AI chip with Highest Power/High Cost-Effective/Easy to Use

Hong-Hu

Far-field voice interaction chip, automotive-grade standard, ultra-large memory, low power consumption

Tian-Suan

Data Lake analysis platform

Tian-Gong

Edge convergence IOT Platform

Tian-He

Cloud native development platform

Tian-Lian

Cloud area platform

Tian-Xiang

Intelligent multimedia platform

Kai-Wu

Industrial Internet Platform

```
# encoding:utf-8
import cv2


face_cascade = cv2.CascadeClassifier('haarcascade_files/haarcascade_frontalface_default.xml')
eye_cascade = cv2.CascadeClassifier('haarcascade_files/haarcascade_eye.xml')

# 读取图像
img = cv2.imread('west.jpeg')
gray = cv2.cvtColor(img, cv2.COLOR_BGR2GRAY)  # 转为灰度图


# 检测脸部
faces = face_cascade.detectMultiScale(gray,
                      scaleFactor=1.1,
                      minNeighbors=5,
                      minSize=(30, 30),
                      flags=cv2.CASCADE_SCALE_IMAGE)
print('Detected ', len(faces), " face")


# 标记位置
for (x, y, w, h) in faces:
    img = cv2.rectangle(img, (x, y), (x + w, y + h), (255, 0, 0), 1)
    # cv2.circle(img, (int((x + x + w) / 2), int((y + y + h) / 2)), int(w / 2), (0, 255, 0), 1)
    roi_gray = gray[y: y + h, x: x + w]
    roi_color = img[y: y + h, x: x + w]

    eyes = eye_cascade.detectMultiScale(roi_gray)
    for (ex, ey, ew, eh) in eyes:
        cv2.rectangle(roi_color, (ex, ey), (ex + ew, ey + eh), (0, 255, 0), 1)


label = 'Result: Detected ' + str(len(faces)) +" faces !"
cv2.putText(img, label, (10, 20),
            cv2.FONT_HERSHEY_SCRIPT_COMPLEX,
            0.8, (0, 0, 0), 1)

# 显示图像
cv2.imshow('img', img)
cv2.waitKey(0)
cv2.destroyAllWindows()
```

```
import paddlehub as hub

module =

hub.Module(name="ultra_light_fast_generic_face_detector_1

mb_640")

res = module.face_detection(paths = ["./test.jpg"],

visualization=True, output_dir='face_detection_output')
```

Coordinate Box Selection

Matrix Operation

Haar Feature Extraction

Face Recognition

Image Reating

Recursive Operation

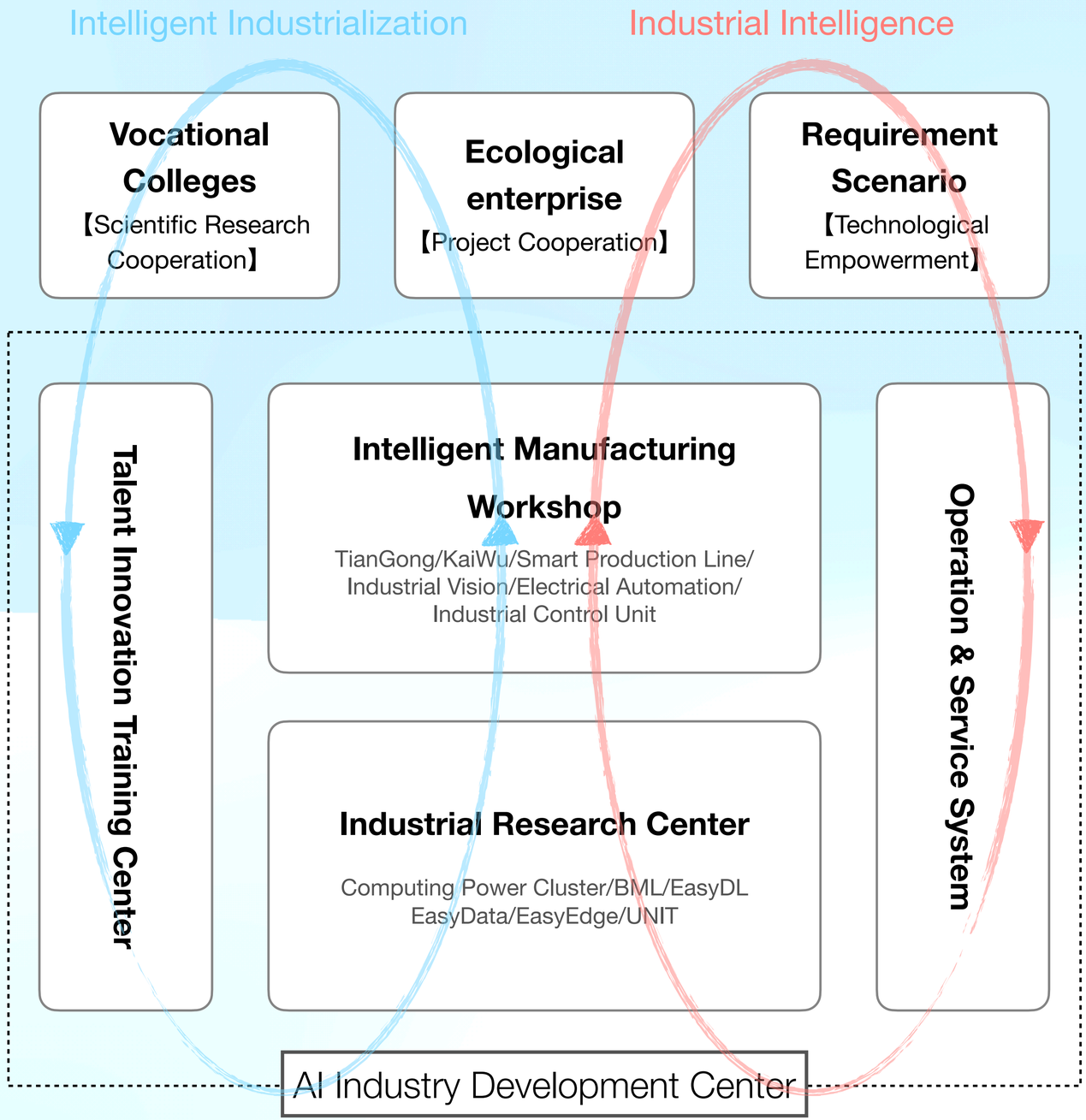
Adaboost Training

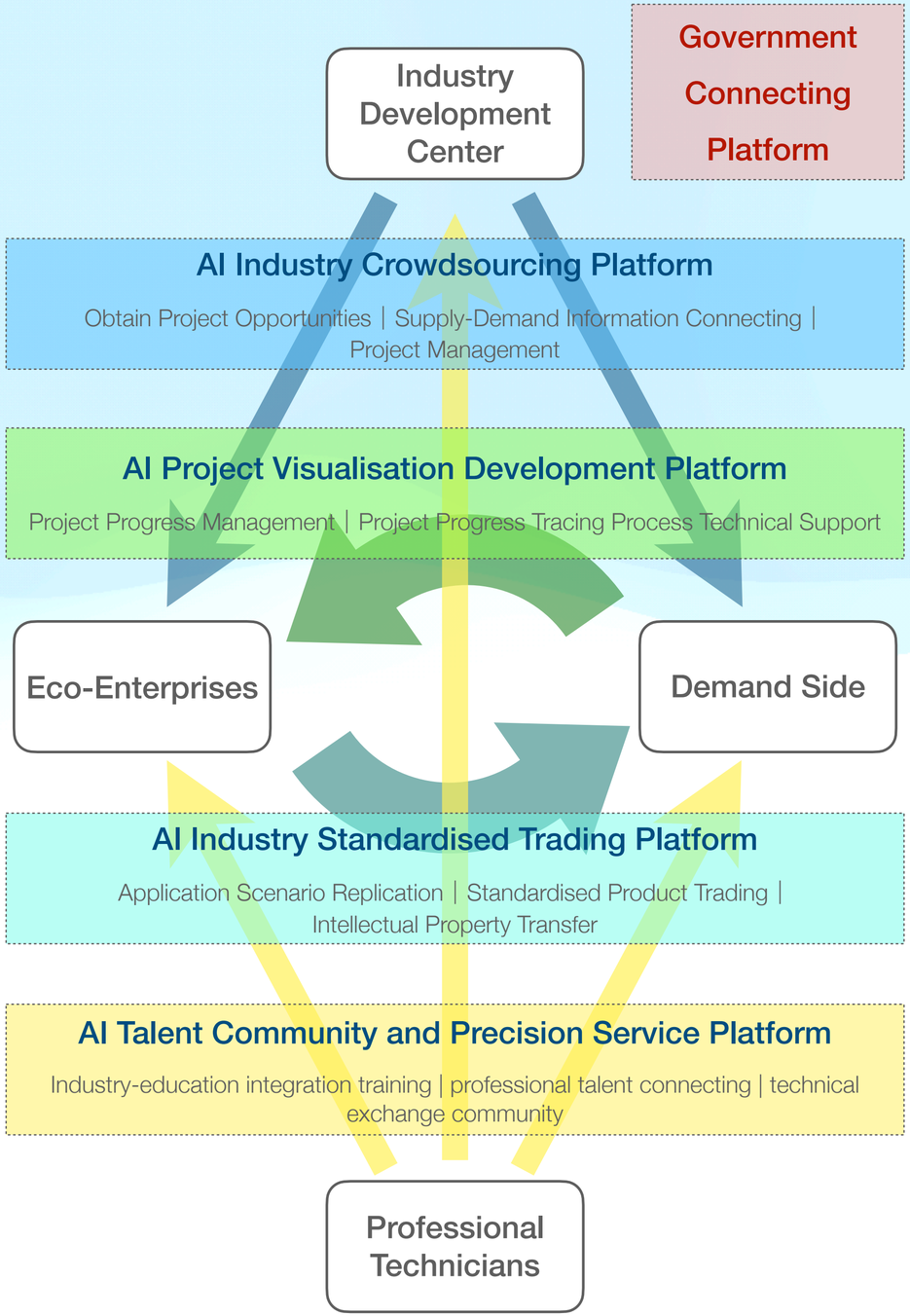
1000000+ Data Training

Image Integration

OpenCV Environmental Installation

10000+ Data Acquisition


Intelligent Industrialization
Industrial Intelligence
Vocational Colleges
【Scientific Research Cooperation】
Ecological enterprise
【Project Cooperation】
Requirement Scenario
【Technological Empowerment】
Talent Innovation Training Center
Intelligent Manufacturing Workshop
TianGong/KaiWu/Smart Production Line/
Industrial Vision/Electrical Automation/
Industrial Control Unit
Industrial Research Center
Computing Power Cluster/BML/EasyDL
EasyData/EasyEdge/UNIT
Operation & Service System
AI Industry Development Center

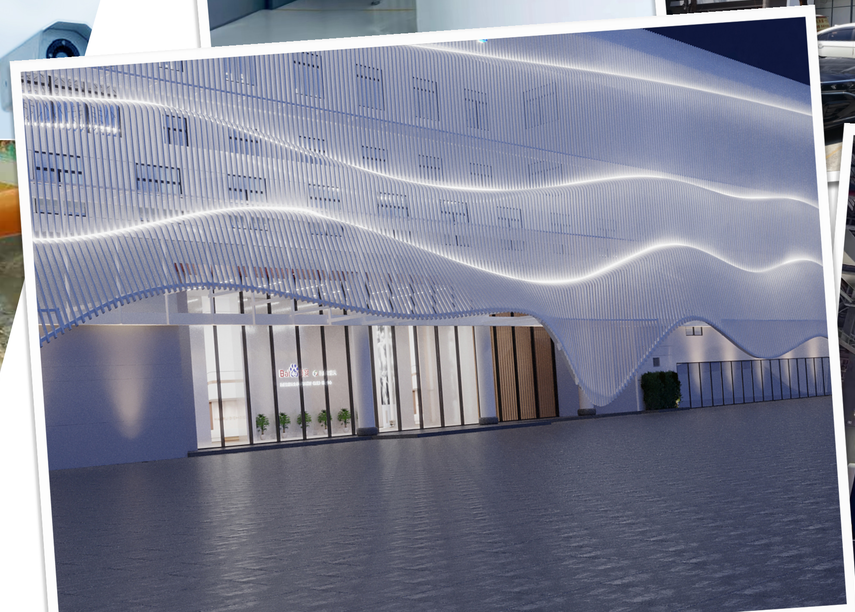

Industry Development Center
Government Connecting Platform
AI Industry Crowdsourcing Platform
Obtain Project Opportunities | Supply-Demand Information Connecting | Project Management
AI Project Visualisation Development Platform
Project Progress Management | Project Progress Tracing Process Technical Support
Eco-Enterprises
Demand Side
AI Industry Standardised Trading Platform
Application Scenario Replication | Standardised Product Trading | Intellectual Property Transfer
AI Talent Community and Precision Service Platform
Industry-education integration training | professional talent connecting | technical exchange community
Professional Technicians

Manufacturing
Empowerment
92%

Government
Procurement
Projects
49%

8%

Successful
Case
Replication



CTM
澳門電訊
BEYOND EXPO
CTM 5G

1 Textile Industry

AI New Experience in Fabric Inspection

2 Agriculture

Yingde Red Tea Withering Process Practice

3 Animal Husbandry

Intelligent "ID Card" for Dairy Cows

4 Construction Industry

AI Protecting Tower Crane Safety

5 Urban Management

All-weather Road Disease Inspection

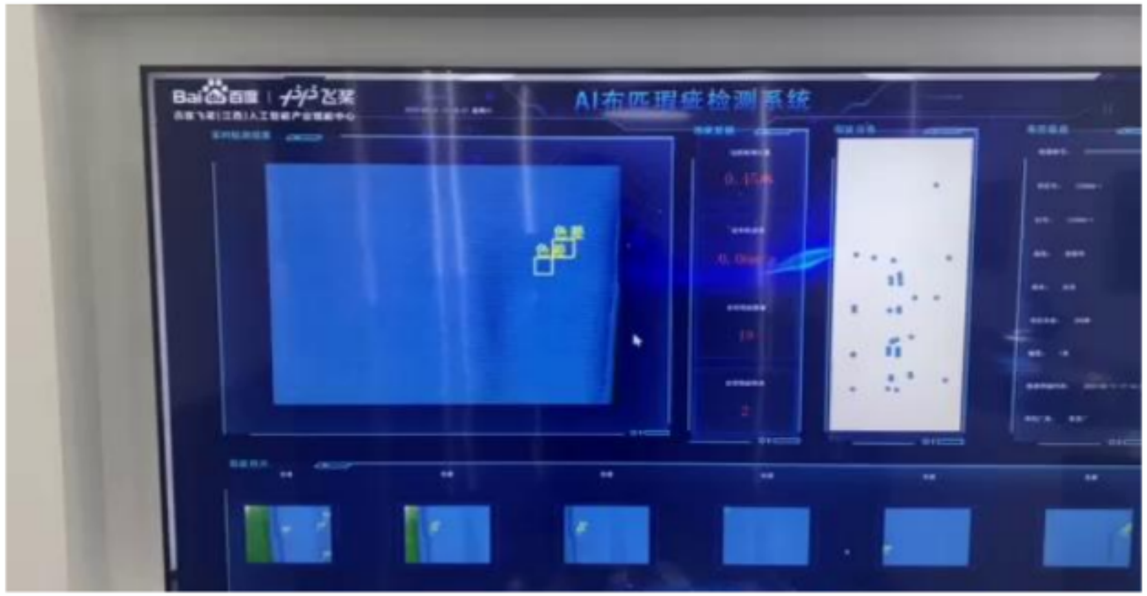
1 Textile Industry

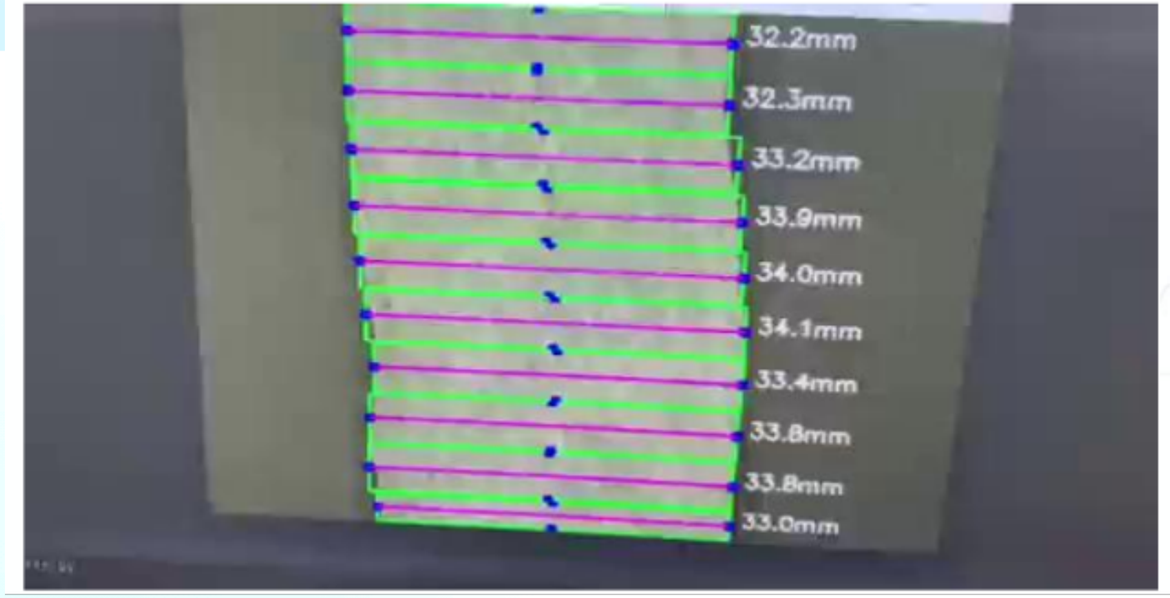
AI New Experience in Fabric Inspection

- **Low Efficiency**：Manual fabric inspection time is about ***15*** meters/minute, and repetitive tasks such as marking and recording data take more time. Traditional reports require manual calculation and filling.

- **Poor Quality**：Poor detection of defects, manual inspection is prone to fatigue and subjective errors, with an average detection rate of about **70%**.；

- **High Cost**：High recruitment, management, and training costs. Information recognized by humans cannot be effectively transmitted, and the industry faces pain points such as forming unified standards.





幅宽检测

1.系统精确显示幅宽偏差数据和地图，提供决策依据；

2.降低用工成本（减人），提高检测效率，不受客观因素影响；

3.减少布料浪费，降低采购成本。

成衣尺寸检测

1.提高检测精度和效率（由分钟缩短到秒）

2.在熨烫后直接进行检测，由抽检实现全检，保障出厂的每件衣服都合格

满足高端用户订单需求！提高品牌的知名度！

This solution is widely applicable to fabric quality inspection at various stages of textile industry manufacturing, printing and dyeing, garment making, etc., and is suitable for inspection of surface defects and color differences of knitted and woven plain fabrics. More accurate, faster inspection efficiency, and lower inspection costs make intelligent fabric inspection the best choice for the future textile industry.

- **Image Acquisition Module** collects image data of fabrics, including color, texture, shape, etc
- **Image Processing Module** preprocesses the collected images, including detail enhancement, noise removal, contrast adjustment, etc.
- **Intelligent Decision-Making Module** comprehensively judges the quality and qualification of fabrics based on factors such as fabric material, color, size, and historical inspection data, and generates inspection reports that meet requirements.

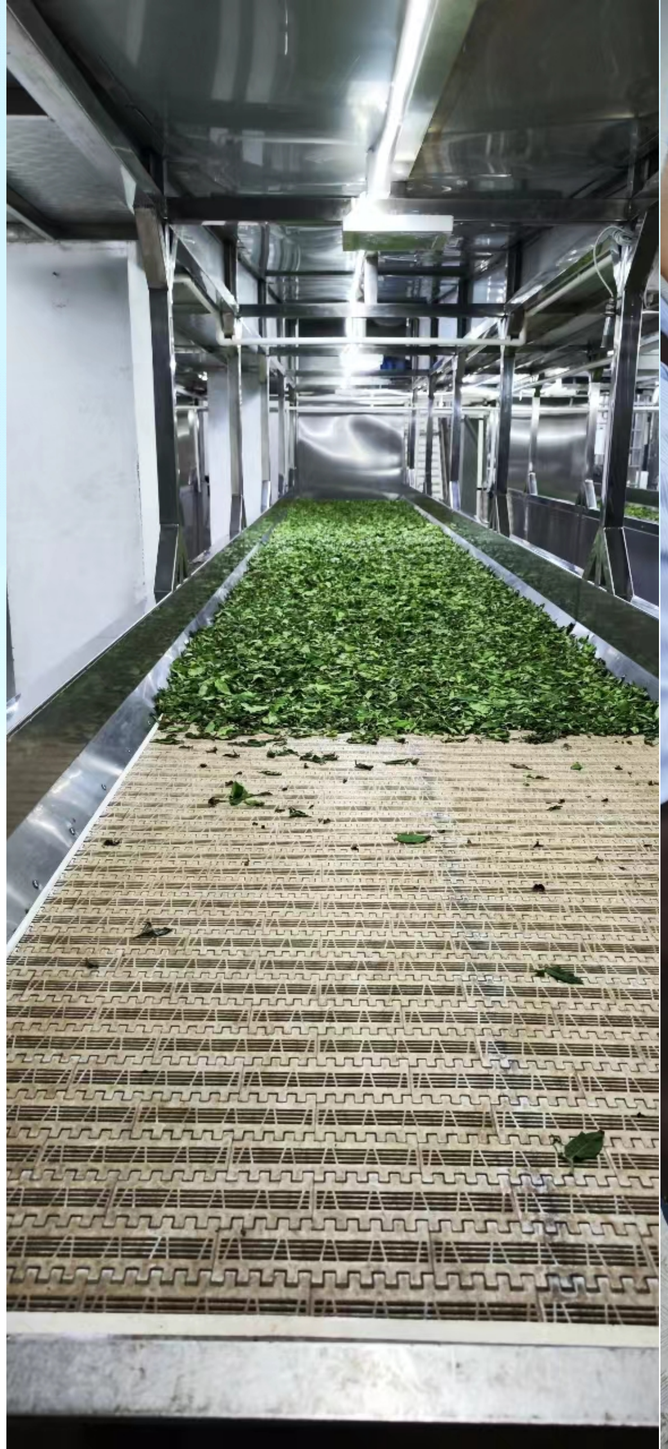
2 Agriculture

Yingde Red Tea Withering Process Practice

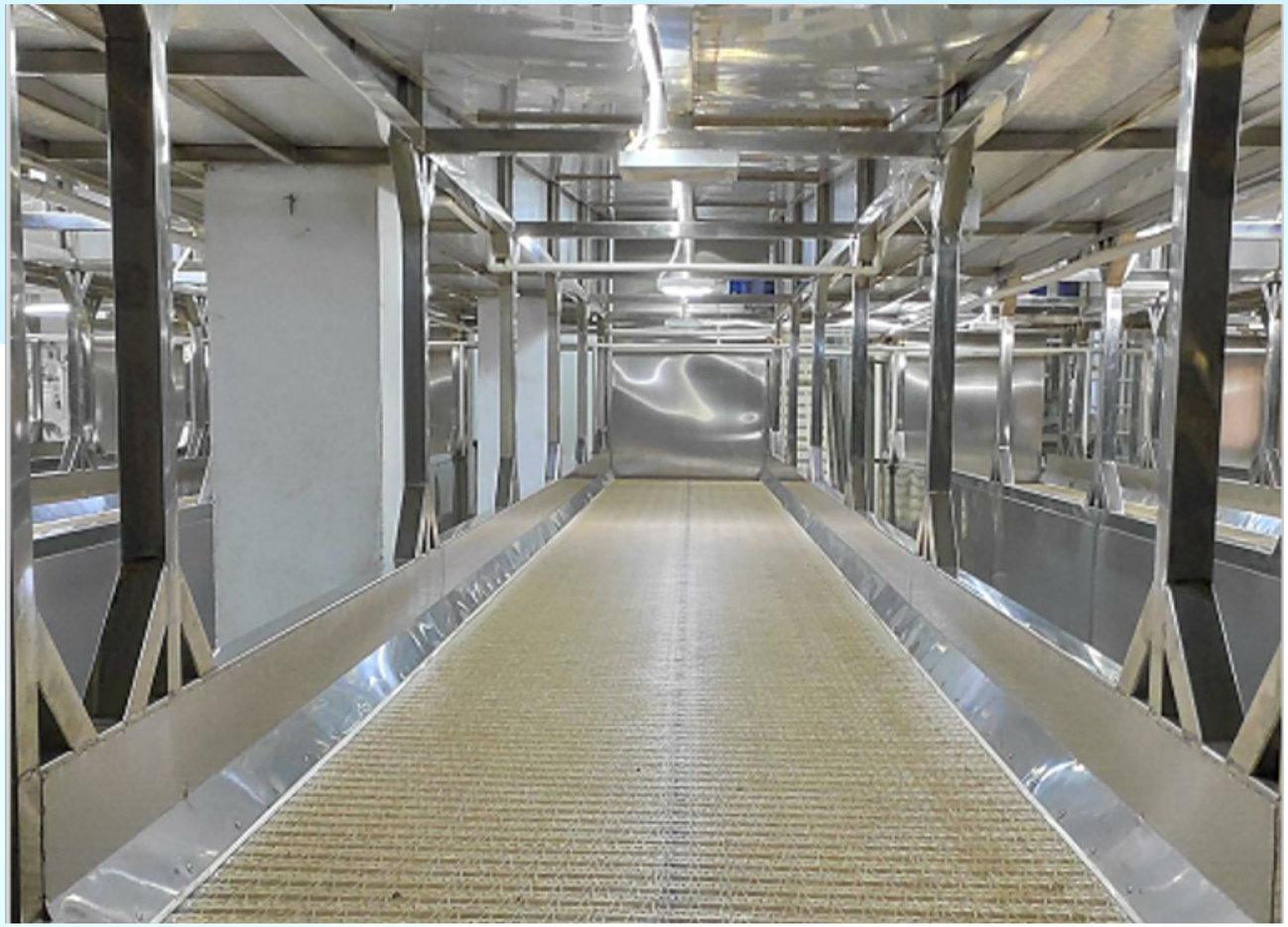
Guangdong Hongyan Tea Industry Co., Ltd. is an important enterprise in the Yingde red tea industry and a technology transformation platform of the Tea Research Institute of Guangdong Academy of Agricultural Sciences. By relying on technological advantages, it is committed to R&D and production, representing the highest level of specialty famous tea products in Guangdong.

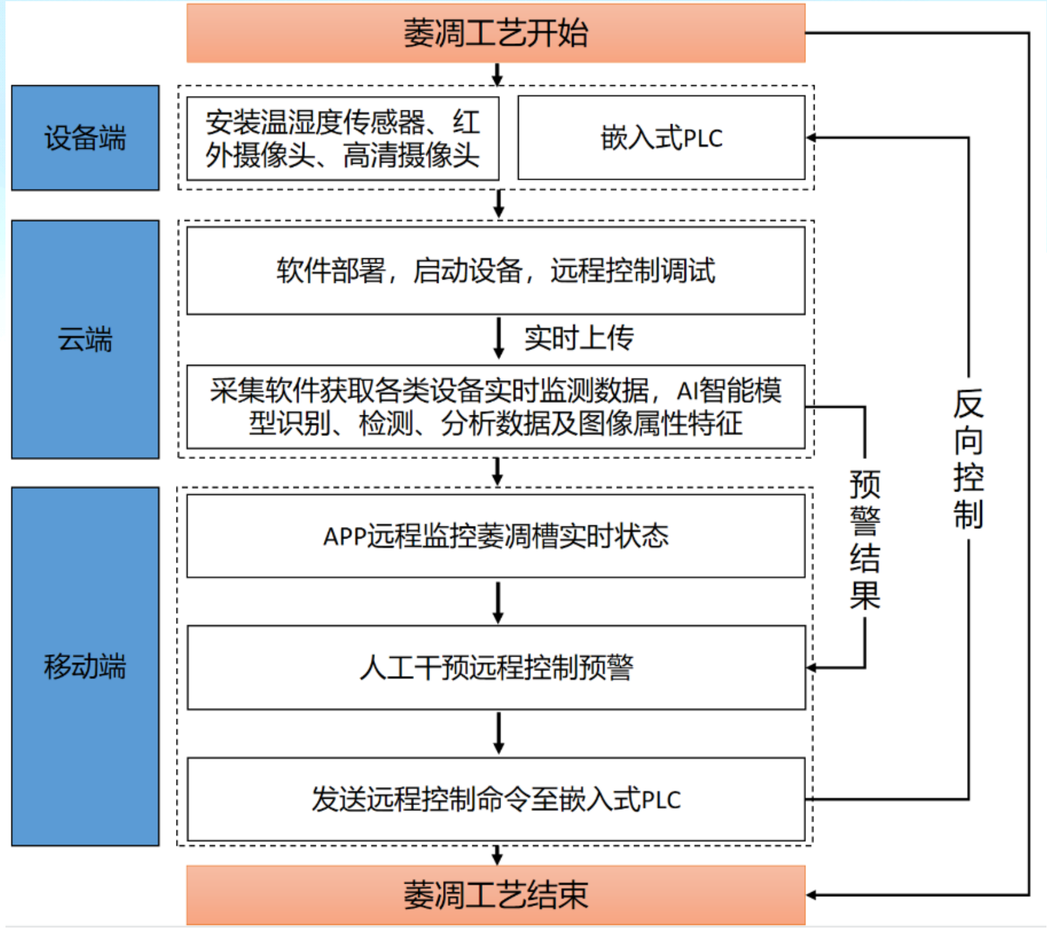
However, Hongyan Tea also faces industry pain points such as tight labor in tea gardens, inconsistent picking standards for fresh leaves, uneven withering standards for red tea, and contradictions between product standards and tea garden production.

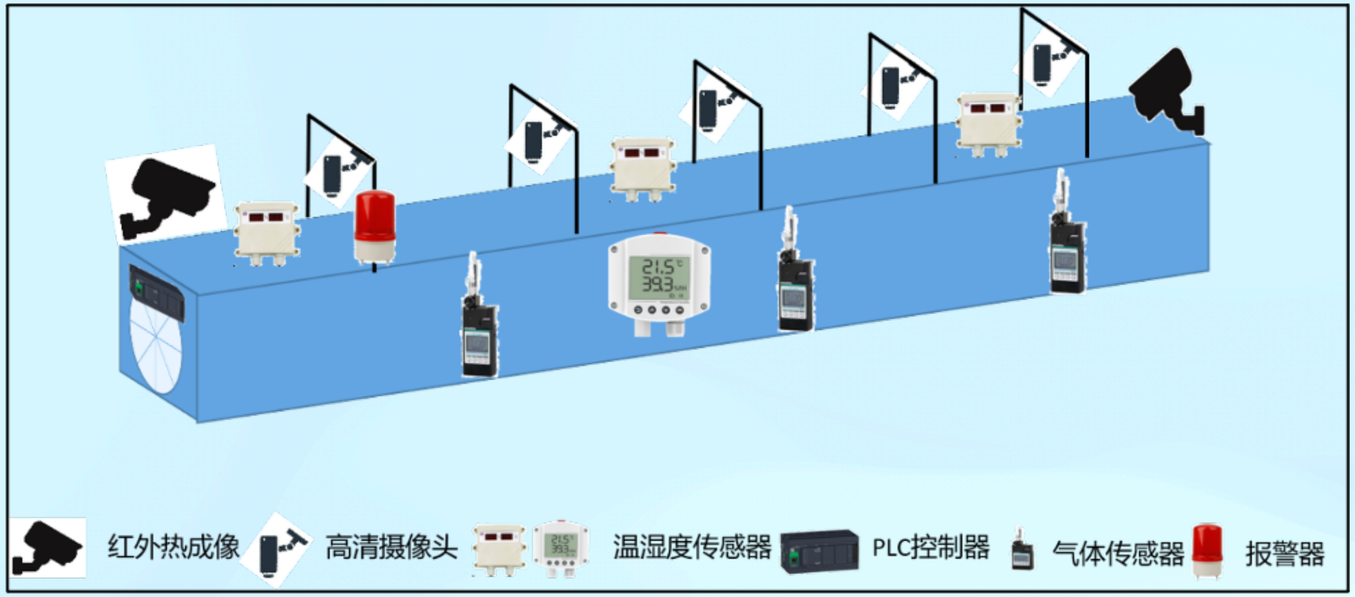
Withering is an important process for forming the quality of black tea. Currently, in traditional withering processes, fresh leaves are spread on withering troughs, and production personnel control the air volume and time of the withering trough blower to wither the fresh leaves. Since different tea makers have different judgments on the activity of withering, it directly affects the quality of each batch of tea leaves.

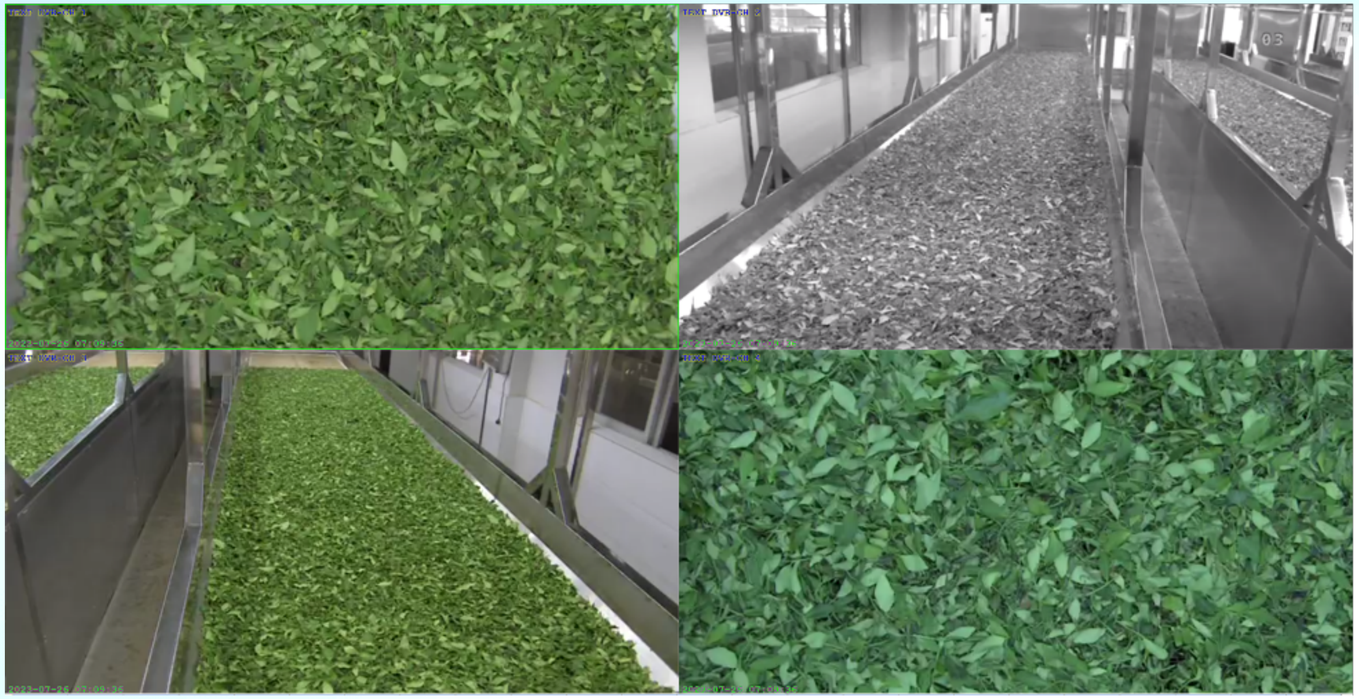


By combining infrared thermal imaging technology, AI intelligent recognition models, and high-definition camera monitoring technology to form intelligent withering equipment, it is applied to tea withering. The blower's start and stop state and air volume size are automatically controlled based on the changes of various factors in the withering process of fresh leaves, accurately mastering the withering standards of tea leaves.









"Smart Tea Processing" is one of the key research and implementation objects in the future tea industry. Therefore, the establishment and application of intelligent withering equipment have great prospects. Moreover, by establishing models for the standard state of appropriate withering of tea leaves, it can more accurately determine the real-time state of fresh leaf withering. Additionally, the withering equipment can automatically control the blower's start and stop state based on the water content and physical state of the fresh leaves, truly realizing "fully intelligent withering of fresh leaves."

利益行业发展

- 减轻传统茶叶萎凋带来的巨大的劳动损耗与生产成本
- 消除茶叶品质参差不齐的现象
- 茶叶品质趁于标准化生产

科技创新推广

- 中小型茶叶加工企业至少节约生产成本10—20万元/年
- 增创收益约20-30万元/年
- 培养“智慧茶叶加工”技能型人才至少20人次/年

3 Animal Husbandry

Intelligent "ID Card" for Dairy Cows

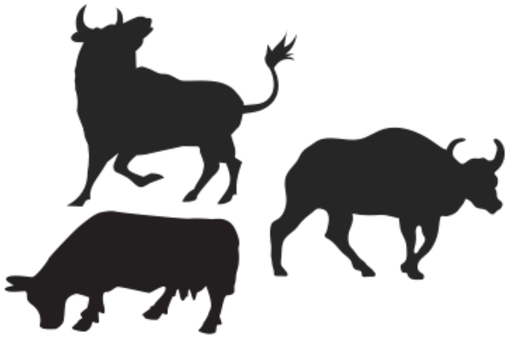
The client focuses on movable property pledge supervision business, specializing in movable property pledge supervision business, dedicated to providing enterprises with convenient, high-quality, safe, and efficient supervision services. Currently, ranch supervision mainly relies on traditional human monitoring, supplemented by conventional supervision systems, still requiring manual counting and completion of statistical reports.

- Automated Image Quality Screening
- Create a Visual Monitoring Platform
- Static Counting Function
- Dynamic Tracking Function

摄像机采集现场视频图像数据

抽帧主机抽取图片到办公机房的边缘盒子训练开发模型

部署系统AI 模型自动筛选合格图片



系统根据AI模型图片自动点数（静态、进出）

系统生成牧场当日监管等各类数据表

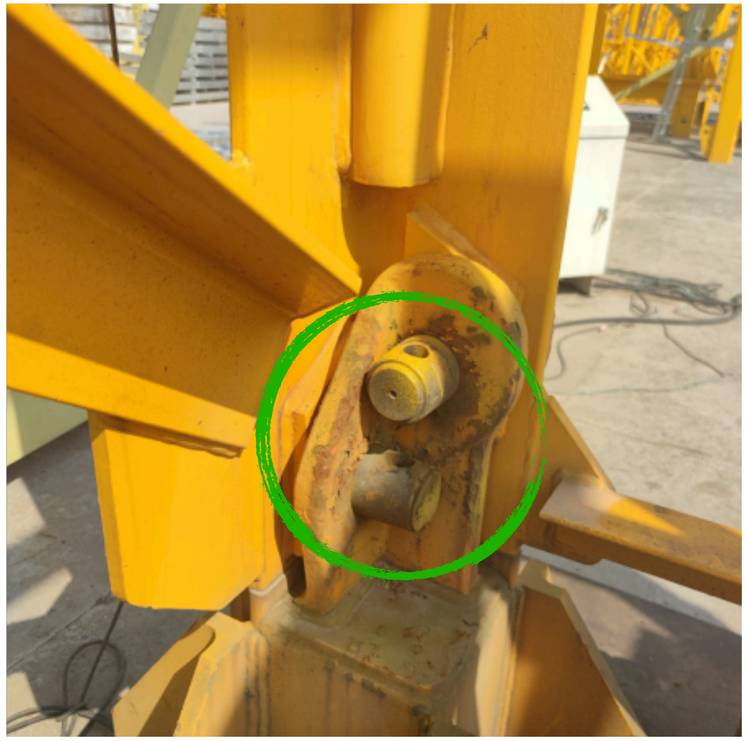
各金融机构通过PC/移动端查看牧场监管实时数据

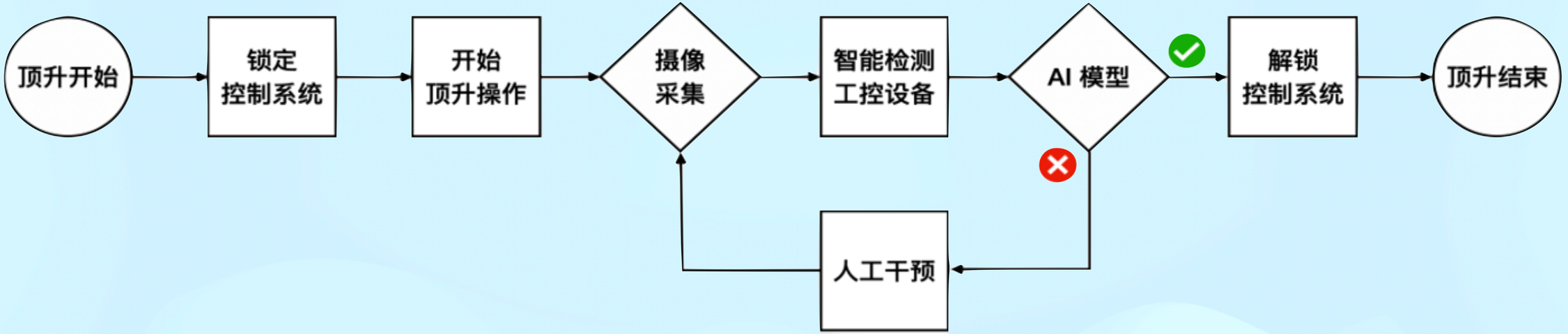
4 Construction Industry

AI Protecting Tower Crane Safety

抖音
抖音号: 90515454012
中国网 应急
成都简阳一塔吊作业时倾倒
已致6人死亡
资料画面
9月13日
四川简阳
北京日报

Based on the infrastructure, deep learning framework, and CV algorithm model construction of Baidu Artificial Intelligence Industry Empowerment Center, including the application of image target detection, image enhancement and segmentation, key point recognition, etc., artificial intelligence scenario application is empowered to the existing tower crane construction machinery safety management system.





置信度 80%

序号	名称	置信度
1	有插销_NG	99.97%
2	有插销_NG	99.91%

上传图片

识别结果

置信度 80%

序号	名称	置信度
1	完成_ok	99.75%

上传图片

置信度 80%

序号	名称	置信度
1	有插销_NG	99.77%
2	无插销_NG	98.82%

上传图片

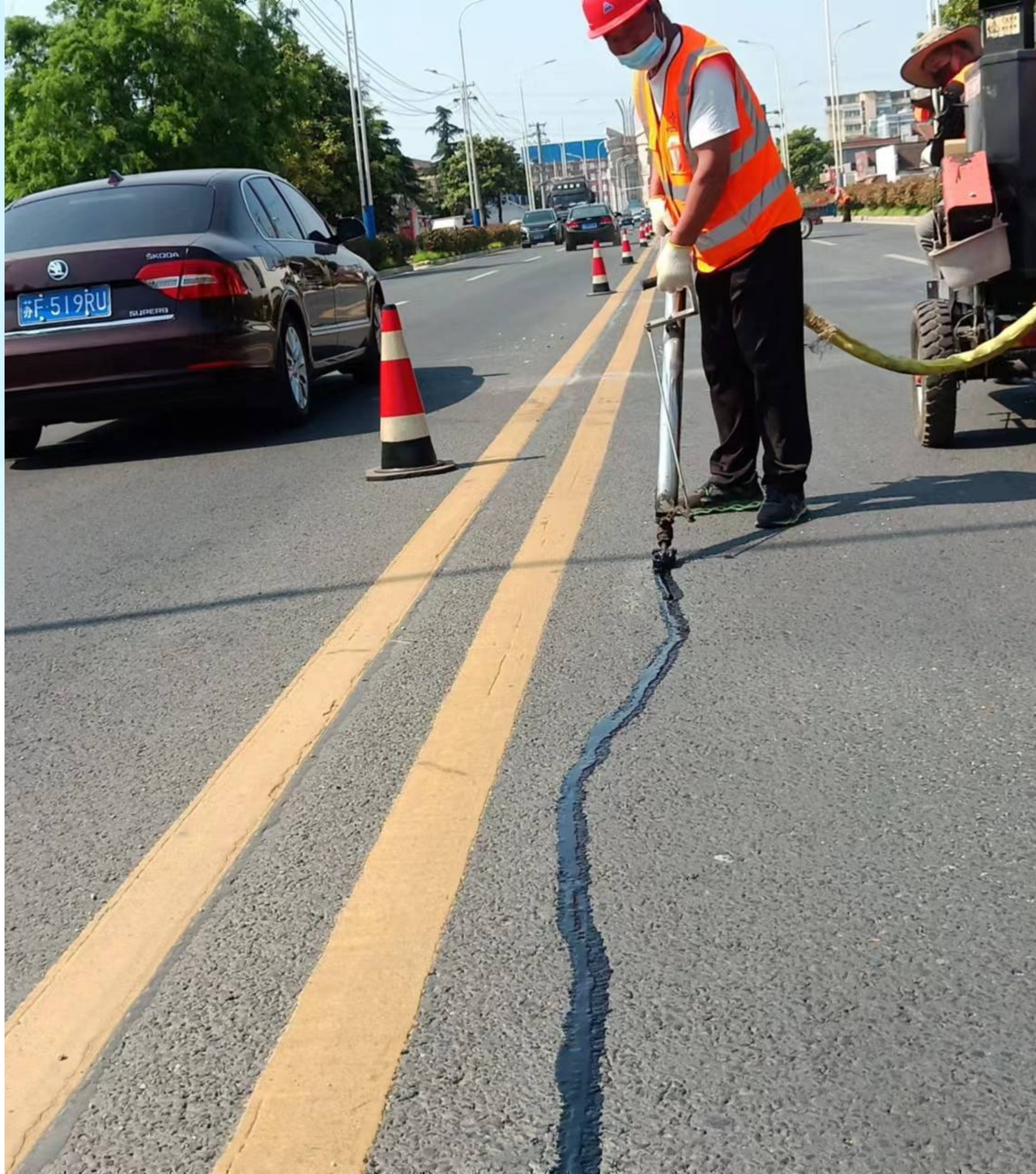
5 Urban Management

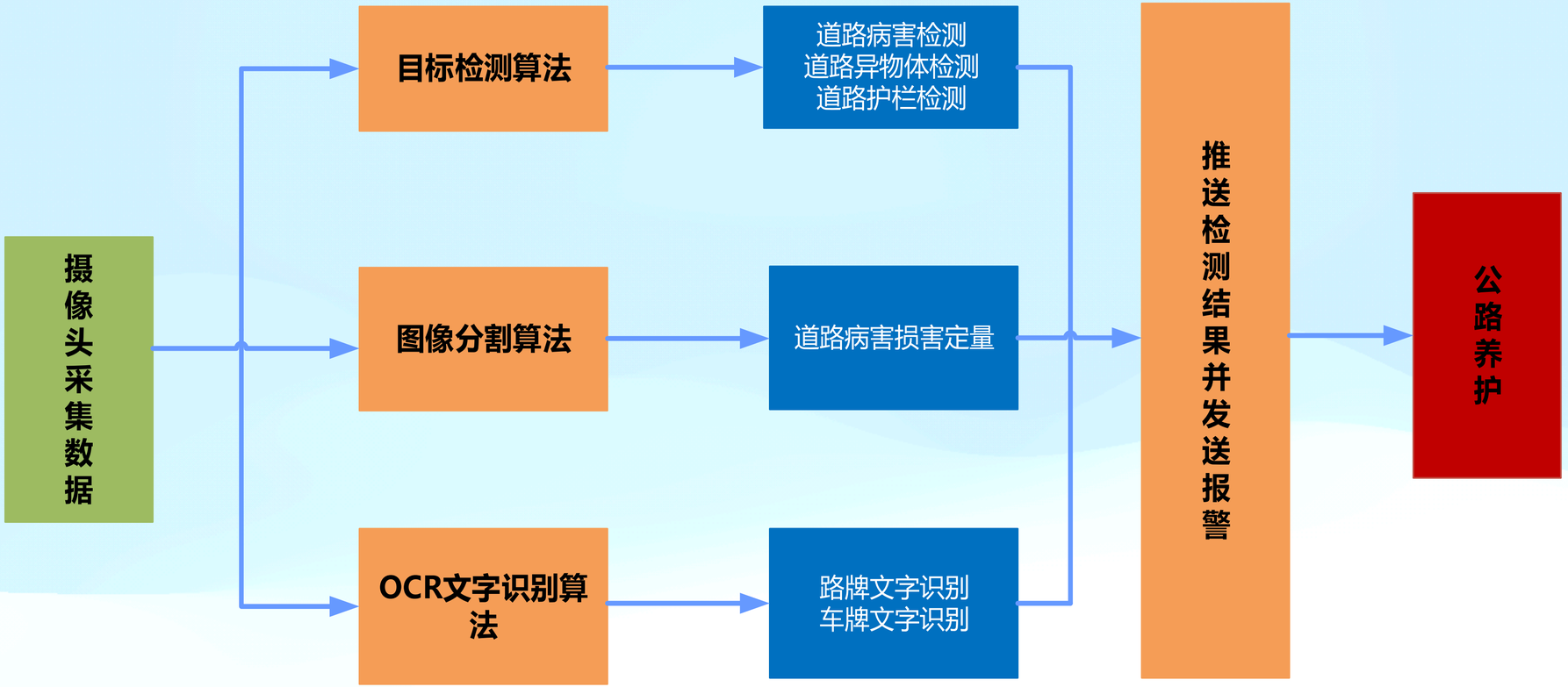
All-weather Road Defect Inspection

China's road construction has developed rapidly in recent years, with an unprecedented growth rate. However, due to the rapid increase in the number of motor vehicles, the damage speed of road surfaces is also accelerating, and the workload of road disease detection is becoming increasingly heavy. Currently, the manual visual inspection method adopted has low efficiency and consumes a lot of time, manpower, and material resources.

According to statistics, a single highway road disease screening requires visual inspection of over **40 million photos**, and the engineer team needs to spend at least a few months to complete the work.

Based on these pain points, Baidu Artificial Intelligence Industry Empowerment Center has designed a complete set of road monitoring solutions based on computer vision.




摄像头采集数据
目标检测算法
图像分割算法
OCR文字识别算法
道路病害检测
道路异物体检测
道路护栏检测
道路病害损害定量
路牌文字识别
车牌文字识别
推送检测结果并发送报警
公路养护

裂缝
裂缝

井盖

裂痕

百度飞桨（江西）人工智能产业赋能中心

COST REDUCTION **90 %**

ACCURACY **3 mm**

ACCURACY RATE **95 %**

POSITIONING: ***SUB-METER LEVEL***

SPEED **80+ km/h**

爱这时代
星辰大海